

# FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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## Flight.

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## CONTENTS.

	PAGE
Editorial Comment:	
Why not Pilot-Chauffeurs? ...	427
National Insurance Against Aircraft...	427
"Munitions" Minister Includes Aircraft ...	428
The Roll of Honour ...	428
Night Flying and Landing ...	429
Aircraft Work at the Front. Official Information ...	430
An Italian Monoplane—The Gabardini ...	431
The British Air Services ...	432
Royal Aero Club. Official Notices ...	433
Eddies. By "Æolus" ...	437
Flying at Hendon ...	438
From the British Flying Grounds ...	439
Aircraft and the War ...	442
Models. Edited by V. E. Johnson, M.A. ...	443

would still be able, not only to pilot their machines if necessary, but to give instructions to the driver with regard to the course to follow, &c. Those who have come in contact with the men of the Royal Flying Corps know that they include a very large number who are admirably adapted for such duties as we have outlined, who are not only keenly enthusiastic on the subject of aviation generally, but are also anxious to do all in their power to aid the advance of the R.F.C. to which they are attached.

It may be thought that it is yet early in the day to suggest such a scheme, but, as our readers know, we have very large ideas of the future of the "Fifth Arm," and when it attains to the enormous dimensions which must assuredly come in time it will, we think, be found uneconomical to employ officers, highly-trained in the military art, to pilot the machines. In view of that, it seems obvious that the sooner a start is made with the new system the better. Furthermore, the encouragement which such a departure would give is likely to make the R.F.C. still more popular even than it is at present.

## EDITORIAL COMMENT.

### Why not Pilot-Chauffeurs?

What the future has in store for aviation from a national point of view it is perhaps difficult to place a limit on, but the views expressed in the pages of FLIGHT from time to time have indicated that in our opinion there are likely to be huge developments within the next decade or so. Although the list of qualified pilots is growing very satisfactorily at the present time, we look forward to the day when the pace of increase will be multiplied many times, so that there will be ample margin for all emergencies that may arise in connection with the requirements of the flying services. In this connection we think there must be vast potential means of supply from the rank and file of the Royal Flying Services, and it would seem that, owing to the great advance which has been effected in regard to the stability and reliability of aeroplanes, the time is rapidly approaching when the actual work of piloting the machine can be entrusted to a man who has been specially trained, so as to be, in effect, an aeroplane driver. By this means all the highly valuable men who at present are actually acting as flying officers would be relieved of the necessity of looking after the machine in the air and be able to give their whole attention to the vital business of observation, and they

### National Insurance Against Aircraft.

It is quite evident that the idea of the nation taking over the responsibility for any destruction perpetrated by enemy aircraft is obtaining a strong hold upon the public at last. Like most novel proposals, it takes a long time for the responsible people to come into line, but when they grasp the situation, as a rule, the necessary remedy is forthcoming and leeway due to past neglect is made up. So, let us hope, will it work out with the scheme of National Insurance which has been so consistently advocated in the pages of FLIGHT for months and months past. Again, on Monday night last, confirmation from Mr. Asquith in the House of Commons was forthcoming of the intention of the Government to proceed with it in some form, and moreover it was gratifying to note that there is no intention to relieve the underwriters of their responsibility for claims under policies already issued. This is in accordance with the views already expressed in FLIGHT. By way of a side-issue, a movement now appears to be in progress to induce or allow the great fire insurance offices to open their books to aircraft risks. Hitherto they have religiously kept aloof. Whether this guarded attitude has been mainly prompted by the element of unknown risk attached to such a departure, or that the powers of

the companies are not sufficient to justify them in extending their activities to this new form of risk, it is difficult for those outside the tariff offices to determine. Now, however, that there is a prospect of the business receiving the material blessing of the Government, it looks as if there is likely to be a reconsideration of this attitude. And, perhaps, it is just as well. Without doubt, by reason of most of the leading companies leaving the aircraft risk outside their policy, Lloyd's, as usual, has been forced into the position of pocketing many thousands of pounds of easily-earned premiums. With the entry into the field of the tariff offices under the wing, as it were, of the Government, a more uniform rate of insurance will at once come into force. This is, of course, assuming that the entire responsibility is not being assumed by the Government, and that some moderate scale of premiums is put forward which will meet all reasonable possibilities in the shape of claims. Under these conditions, without question, the Government would find the wonderful organisation of the insurance companies the most economical and efficient channel through which to launch their scheme, as, in similar manner to the nation's scheme of war insurance on shipping through the ship-owners' mutual clubs, such guarantees could be given to the tariff houses, as to protect them, in any event against ultimate loss. About the only public body which has hitherto moved in support of this matter has been, much to their credit, the London Chamber of Commerce, and at a meeting of their Council, presided over by Mr. Lionel A. Martin, at the end of last week, a report was made by the special committee on Aircraft and Bombardment Risks as to further representations to the Government in favour of the State accepting complete liability in respect of damage to property and goods by aircraft or bombardment, having regard to the present prohibitive rates of insurance where such were obtainable, and to the action of some discounting banks in demanding insurance policies to cover the goods before advances were made on bills. Much dissatisfaction was expressed at the difficulties which had been experienced in getting precise information as to the intentions of the Government. In view of the extreme urgency of the question and the need for an immediate assurance on the part of the Government, the council confirmed the action of the special committee and unanimously adopted the following resolution, which was conveyed the same day to the Prime Minister and the Chancellor of the Exchequer:—

"That in the opinion of the Council of the London Chamber of Commerce it is urgently necessary that the Government should, as a national obligation, undertake, without further delay, the entire liability for loss of, or injury to, life, property, or goods whether consequent on the operations of aircraft or caused by bombardment."

It is gratifying to us to record this action, as a justifi-

## The Roll of Honour.

THE following casualties in the Expeditionary Force have been reported from General Headquarters to the War Office:—

Under date June 4th:

### Missing.

Captain A. D. Gaye, Bedford Regt., 1st Batt., attached R.F.C.  
Captain F. H. Prichard, R.G.A., attached R.F.C.

Under date June 6th:

### Officially Reported Interned in Holland.

Lieutenant E. E. Hodgson, Royal Flying Corps.  
Lieutenant C. M. Morrell, Royal Munster Fusiliers, 9th Batt., attached R.F.C.

cation of the persistent attitude of FLIGHT in claiming that enemy aircraft risk is a National obligation and not one for any single unit of the community to shoulder.

### "Munitions" Minister Includes Aircraft.

To those outside the circle of the Cabinet surroundings it may appear surprising that, in view of the remarkable part which aeroplanes have played in the efficient conduct of this war, a man in the position of Mr. Lloyd George should have visited an aeroplane factory for the first time on Saturday last. The ramifications of the duties and the calls upon the time of a British Chancellor of the Exchequer are, however, so widespread that it requires but little reflection to absolve the new Munitions Minister of any neglect of duty in the past in this connection. Now Mr. Lloyd George has made acquaintance with the interior of such a hive of industry as the British and Colonial Aeroplane Works at Filton the home of the famous Bristol aeroplanes, the highly favourable impression which was left upon him is likely to be of lasting benefit to the entire industry in the future, in the days when the war is no more and when the horrors of to-day will, by efflux of time, have toned down in their intensity. The visit to the Bristol works was in a way but due to Sir George White, who, in the early days of aviation, had the courage of his opinion, and was the means of helping by his splendid financial backing to bring home, in conjunction with the other discouraged constructors, to the world at large that there were commercial possibilities in store for aviation. It is men such as this that the nation have to thank for Great Britain being able to more than hold her own in the air during this war, and it must have been a source of much gratification for Sir George White to hear the Minister for Munitions give voice to the testimony of the worth of aeroplanes to our commanders at the Front.

"The more of these machines you can turn out the better it will be for our brave fellows in France," said Mr. Lloyd George in his speech to the employees at the Bristol Company's works. "It is the only way," he continued, "we can detect the hidden gun emplacements of the enemy. Those splendid aviators and observers find out exactly where the trenches and guns are, and then our artillery gets to work, and when they have smashed away defences our infantry will turn the Germans out of the trenches. But your job is the first."

There was no mistaking the cheers which greeted the close of the Minister's words. There are no slackers anywhere in aeroplane factories, and the employees in the Filton works gave voice to this fact on behalf of all those employed in the industry with no uncertainty. The demand for "more and still more" machines will be satisfied, if human effort can accomplish the task.

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Under date June 8th:

### Wounded.

Captain A. E. Borton, Royal Flying Corps.

Previously Officially reported Missing, now Unofficially reported Interned in Holland.

Captain F. H. Prichard, R.G.A. and R.F.C.

The following casualties have been announced by the Secretary to the Admiralty:—

Under date May 9th, reported from Dunkirk:

### Slightly Wounded.

P.O. Mechanic W. E. F. Havart.

Under date May 31st:

### Killed.

Flight-Lieutenant Herbert G. Wanklyn, R.N.A.S.



## NIGHT FLYING AND LANDING.

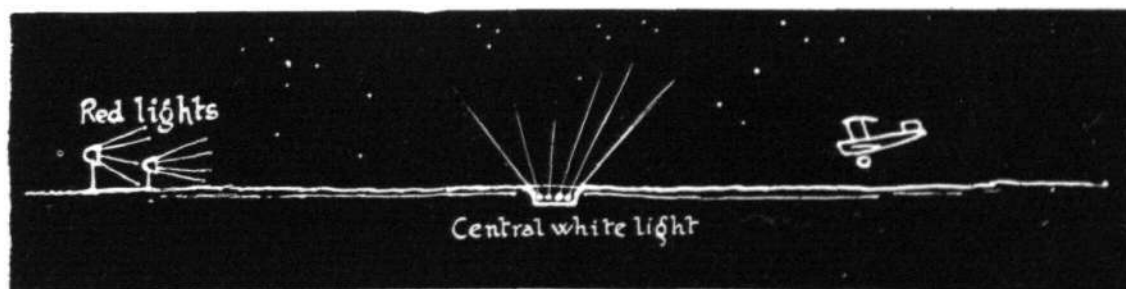
AFTER the repeated nocturnal visits to various seaside places on the east and south-east coast, and more especially after the recent attack on the outlying districts of the Metropolis, although the material damage caused in the last case was slight, and the loss of life happily did not exceed the half-dozen, the question that is on everyone's lips these days is: "Why are not the Zeppelins headed off before reaching the capital, or at any rate brought down on their return journey?" These questions, annoying though they may be to those who are engaged in the perilous task of protecting the inhabitants of these isles, are nevertheless perhaps not unnatural, since the dangers attending night flying are not and cannot be realised by the general public without some considerable technical knowledge of the subject. The argument almost invariably put forward when the difficulties of flying at night are pointed out, is that the Germans are doing it, and in addition are faced with the trouble of covering the distance from their nearest base to our shores. This argument, apart from the fact that an airship cruises and does not fly, arises out of unfamiliarity with the relative characteristics of the aeroplane and the airship. Once the man in the street can be made to realise the advantage of the lighter-than-air craft for night work, and brought to understand that fundamentally it consists in the ability of an airship to remain aloft should one or more of its engines stop, while the aeroplane must perforce come down immediately under similar circumstances, no matter what the nature of the country below, then there will be not only less fractious criticism, but also an appreciation of the difficulties and dangers that confront those to whose vigilance the safe-guarding of our islands is entrusted.

While fully aware of the immense difficulties of an organised night patrol by aeroplanes, still something, it appears to us, might be done to reduce the risks of ascents in the dark and of training officers of the air services in night flying. In this connection it is not uninteresting to once again remind our readers of what has been done in Germany by way of solving the problem. A very full account of the German organisation of aerial lighthouses or beacons was given in our issue of October 2nd, 1914, and it will therefore suffice if we here give only a brief *résumé* of the system. Three types of these lighthouses are in use:

1. The very powerful ones which are to aid the aviator in locating his whereabouts.

the question, since they would act as excellent guides to an invading Zeppelin. The third class, however, those employed for helping the pilot to make a landing at night, under proper control, should be extremely useful. As described in our issue of the date mentioned above, the system employed on a number of German aerodromes is quite simple, and is said to have proved very effective. A large white light is placed in the centre of the aerodrome, sunk into a pit in the ground and covered with a glass plate of sufficient thickness to withstand the shock should the wheels of an aeroplane pass over it. At a distance of about 250 ft. from this light, and also sunk into the ground, are four red lights corresponding to the cardinal points of the compass. Each of the red lights is connected by subterranean connection to a wind vane mounted on a mast at some convenient point. At night the central white light is burning continually, whilst the number of red lights burning is determined by the direction of the wind. If the wind is east, only the white light in the centre and the red light to the east will be burning. Should the wind direction be north-east, both the north and the east red lights would be showing, the electrical connections being arranged to ensure this. An aviator returning to the aerodrome would therefore see from which direction he should land.

This arrangement, although said to have proved satisfactory, seems to us not to go quite far enough. It is all very well to tell a pilot from which side to approach the aerodrome in order to land into the wind, and to show him by means of a white light where is the centre of the aerodrome, but what is even more important is to devise some means of telling him how far he is off the ground just before attempting to effect the landing. The altimeter is a fairly good guide down to a height of about a hundred feet or so, but after that it cannot be relied upon, and it becomes a matter of some difficulty to judge the exact height. Here a possible development of the German system suggests itself. Instead of the red lights sunk into the ground, which give the horizontal but not the vertical direction, an arrangement similar to that illustrated in the accompanying sketch appears to have possibilities. Two short posts, which as a matter of fact should be made so low that there was little danger of flying into them, would take the place of each of the red lights, and be arranged at such distance from each other as experience may suggest. The relative heights of these posts should be such that when a pilot was sitting in the



2. The lesser ones marking obstacles, such as towers, cables, &c.

3. The still weaker ones used for aiding the pilot in making a landing.

For use in any scheme of aerial defence the beacons of the first and second classes would appear to be out of

seat of an aeroplane of average height at rest on or near the central white light, the lights on the two posts would be visible one just above the other. Where the aerodrome was of a somewhat restricted area the posts could be made fairly light, in fact a couple of inch poles 8 to 10 feet long would serve to support an electric light, and

this would collapse should a machine inadvertently fly into one, the light of which was not burning at the time, and no serious damage need be caused to the machine. If necessary, the posts on the side from which the pilot was coming in could be laid flat on the ground. Should four pairs of these posts prove insufficient, an additional four pairs could be added to represent north-east, south-east, south-west, and north-west. A pilot about to land would then point his machine down, heading for the central white light, and at the same time keep an eye on the lights on the two posts. If he began to see the two red lights fairly close on top of one another while still some distance from the white light, he would know that it was time to flatten out. If, on the other hand, he was approaching the white light, and the two red lights were still some distance apart (in the vertical sense, of course), he would have to dive a little to get closer to the ground before passing the white light. After a few practice flights, which might very well be carried out in the daytime, an experienced pilot should soon be able to land in the dark without running unreasonable risks. The whole arrangement is, of course, based on the supposition that the aerodrome is at least fairly level. Where this is not the case it should not be a matter of unsurmountable difficulties to level four or eight narrow strips running out radially from the white light in the centre to the posts with the red lights. The electric part of the arrangement could be quickly carried out.

As regards the identification of various aerodromes, beacons of the type used in marine lighthouses, *i.e.*, revolving or flash lights, would, as has been pointed out,

serve as guides for enemy aircraft, but a strong signal light capable of flashing out letters of the Morse code, of which each aerodrome would have its special code signal, might be kept always in readiness. An aviator desiring to land would then fire a certain pre-arranged signal with coloured pistol lights, and the look-out give the word to switch on the signal light and the landing lights. These pistol signals would be altered at frequent intervals so as to prevent them becoming known by the enemy.

One of the dangers of such a scheme would be that a Zeppelin might be hovering overhead and be enabled by the flashes to locate the existence and the exact position of an aerodrome, but no matter what system might be adopted, there would always be a certain amount of risk attending it. The time required for an aviator to effect a landing and consequently the time that the lights need be burning would be so short that unless the airship were immediately above the aerodrome the pilot could have made his landing and all lights be out by the time the airship had approached within bombing distance. The darkness would then prevent the exact location of the aerodrome from being seen, although without doubt the crew of every Zeppelin is already furnished with charts in which every aerodrome in the country has been marked down. Their secret service is too well informed not to have seen to that.

Although we are aware that the arrangement suggested is of a somewhat crude character, we think there is the germ of an idea in it, and in that case we have no doubt that those who are actually engaged in the work will speedily find means of improving upon it.

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# AIRCRAFT WORK AT THE FRONT.

### OFFICIAL INFORMATION.

THE following appeared in the despatch dated June 8th, from an "Eyewitness" present with the British General Headquarters:—

" . . . . During the day (3rd inst.) our anti-aircraft guns scored a hit on a hostile aeroplane, which came down close behind the German front line."

In the despatch dated June 12th, from "Eyewitness" there was the following:—

"On Monday, 7th inst., the day upon which our naval airmen obtained such a striking success, two of their comrades in the Royal Flying Corps had a most adventurous flight. Whilst on reconnaissance about twenty miles from our front, they were attacked by several German aviators. It was not long before our pilot was shot through the jaw and neck. At first he collapsed and lost control of the aeroplane, and then recovered sufficiently to steady the machine, which continued its flight pursued and fired at by a succession of hostile aeroplanes. Nevertheless, he gradually grew weaker and weaker through loss of blood, and became hardly conscious of what he was doing, but the observer handed him bandages, and helped him to bind up the wound, which was a dangerous one, while he kept the machine going, maintained observation, and completed the reconnaissance. The pair of officers made a good landing at their base, having returned with the information which they had been sent out to get.

"The pilot is doing as well as can be expected from the nature of his wound."

The following appeared in the official *communiqué* issued in Paris on Tuesday night:—

"As a reprisal for the bombardment by the Germans of open French and British towns, orders were given to bombard this morning the capital of the Grand Duchy of Baden.

"At 3 o'clock a.m., 23 aeroplanes left for Karlsruhe, and, in spite of a northerly wind, they arrived over the city between 5.50 and 6 a.m.

"They dropped 130 projectiles of 90 and 155 millimetres on the points indicated to them, notably on the castle, the arms factory, and the railway station. Many fires were seen to break out while the aeroplanes were hovering over the town. A great panic was observed in the station, whence trains were despatched in all haste towards the east.

"The aeroplanes were vigorously bombarded on the outward journey at Zabern, Strasburg, Rastatt, and Karlsruhe, and on returning at Blamont, Pfalzburg, and Saverne.

"All the airmen returned safely except two."

In a French official communication issued on Tuesday, correcting recent German *communiqués*, there was the following:—

"At Luneville a German airman, chased by two French airmen, threw at random five bombs which caused neither accident nor loss. These useless and ill-directed attacks are designed as a set-off to the success of our air-raids."

In the *communiqué* from the Russian Great Headquarters issued on Saturday there was the following:—

"In the region of Starozeby . . . . our aviator squadrons made reconnaissances and dropped bombs with



success, thus contributing materially to the repulse of the enemy's attack on this front."

The following official note was issued in Rome on the 9th inst. :—

"Yesterday morning one of our dirigibles flew over Fiume and dropped a number of bombs upon places of a military character. While returning, the dirigible was obliged to alight on the water in the neighbourhood of the island of Lussin owing to engine trouble, and caught fire. It appears from a communication issued by the enemy that the crew were saved and made prisoners."

The following appeared in a *communiqué* from the Italian General Staff issued on Sunday :—

### The X3 Raid (June 16th).

THE Admiralty issued the following on Wednesday :—

"A Zeppelin visited the North-East Coast last evening and dropped bombs. Some fires were started, but have been overcome. Fifteen deaths are reported from the district and fifteen wounded."

The following announcement was issued later :—

"Further inquiries show that the casualties in connection with the visit of a Zeppelin to the North-East Coast last night amount to sixteen killed (including one policeman) and forty injured."

## AN ITALIAN MONOPLANE—THE GABARDINI.

OF the several Italian-designed aeroplanes, the Gabardini monoplane, built at Cameri, is perhaps the most interesting and one of the most successful. It was the Gabardini monoplane that was employed for the first civilian aviation school at Cameri, whilst this make of machine has several non-stop flights to its credit, including Milan-Rome, Milan-Turin and Milan-Venice (with three passengers).

The Gabardini monoplane—described in *FLIGHT* on November 6th last—although resembling somewhat the Nieuport, really differs from this French make considerably. For instance, it is built mostly of steel, whilst the



A Gabardini monoplane with 80 h.p. Italian-built Gnome engine.

body is peculiar in that from the nose to a point immediately behind the pilot's cockpit it is rectangular in section, after which it is of triangular section. The steel tubes forming the body are reinforced with wood, providing a light but extremely strong combination.

The wings, which have an upturned entering edge, like the Nieuport, are built up on tubular steel spars with wood I-section ribs loosely mounted thereon so that there is a certain amount of free movement for warping. Another interesting feature is the tail planes, consisting of a semi-circular stabilising surface and two similarly shaped elevator flaps, which are mounted on the body

"On the Tolmino front our excellent airmen continue to execute with skill and daring their work of reconnoitring."

The following was issued by the Serbian Press Bureau, at Nish, on June 9th :—

"Between half-past 5 and 6 o'clock this morning three enemy aeroplanes flew over Kragujevatz and dropped bombs, some of which did not explode. Three people were killed and 10 injured. Our airmen fell in with the enemy airmen as the latter was returning to Smederevo. In the combat one of the enemy aeroplanes was hit by the machine-gun fire of our airmen and fell in Austrian territory. A cloud of thick smoke was seen where the aeroplane fell."

### The X2 Raid, June 6th (June 16th).

THE following was also issued on Wednesday evening :—

"It is now possible to state more exactly the casualties resulting from the airship raid on another portion of the North-East Coast on the night of June 6th.

"The number of deaths is twenty-four, namely, five men (all civilians), thirteen women, and six children. There were also forty cases of more or less serious injury. The principal fires were in a drapery establishment, a timber yard, and a terrace of small houses."

some distance from the rudder, so that the latter has a wide range of action. The engine employed is an 80 h.p. Gnome, built in Italy by the Fabbrica Italiana Motori Gnome at Turin.



The sheds and machines at the Gabardini aerodrome at Cameri (Novara).

## THE BRITISH AIR SERVICES.

*UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.*

### Royal Naval Air Service.

THE following appeared in the Admiralty announcements of the 9th inst. :—

Acting Sub-Lieut. (R.N.R.) L. Morgan transferred to the Royal Naval Air Service, as Flight Sub-Lieutenant, on probation. June 8th.

The following temporary commissions have been granted :—

Lieutenants (R.N.V.R.) P. L. H. Dodson, with seniority of June 3rd, and C. W. Gamble, with seniority of June 8th.

Sub-Lieutenants (R.N.V.R.) H. M. Beddall and J. D. Greenwood, with seniority of May 8th.

The undermentioned have been entered as Probationary Flight Sub-Lieutenants, with seniority as follows: H. G. R. Malet, June 12th; B. C. Clayton, R. Douglas, and W. Perham, June 14th; H. S. Bompas (for temporary service), May 8th; J. H. D. Grant (for temporary service), June 1st; W. L. E. Childers, H. E. C. Plowden, T. F. Morris, and J. Wann (for temporary service), June 8th.

The following appeared in the Admiralty announcements of the 10th inst. :—

Flight-Lieut. (temporary) H. R. Busted transferred to permanent list of R.N.A.S., from June 7th.

Temporary Sub-Lieutenant (R.N.V.R.) A. C. Wade, to "President," additional, for R.N.A.S. June 9th.

Temporary commissions have been granted as follows: E. S. McDonald as Lieutenant (R.N.V.R.), with seniority of June 9th, and appointed to "President," additional, for R.N.A.S.; C. M. Kirkwood, A. R. Courtenay, and R. E. Darnton, as Sub-Lieutenants (R.N.V.R.), with seniority of May 25th, and appointed to "President," additional, for R.N.A.S. (Armoured Cars); R. R. Alexander, as Sub-Lieutenant (R.N.V.R.), with seniority of June 9th, and appointed to "President," additional, for R.N.A.S.

J. H. Ball and L. C. Abbott have been entered as Warrant Officers (2nd Grade), for temporary service, with seniority of June 9th, and appointed to "President," additional, for R.N.A.S.

The following appeared in the Admiralty announcements of the 12th inst. :—

The Hon. Montagu H. E. C. Towneley-Bertie, transferred from Military Wing to R.N.A.S. as temporary Flight Sub-Lieutenant, and appointed to "President," additional, for R.N.A.S. June 4th.

The following have been entered as Probationary Flight Sub-Lieutenants, with seniority of June 13th, and appointed to "President," additional, for R.N.A.S.: F. E. P. Barrington, W. H. Oakey, and I. H. W. Barnato.

A. Landells granted temporary commission as Lieutenant (R.N.V.R.), with seniority of June 5th, and appointed to "President," additional, for duty with R.N.A.S.

The following appeared among the Admiralty announcements of the 14th inst. :—

Temporary Major (R.N.) P. W. North granted temporary commission as Lieutenant-Commander (R.N.V.R.), with seniority of June 11th, and appointed to "President," additional, for duty with the R.N.A.S. (Armoured Cars).

Temporary Sub-Lieut. (R.N.V.R.) L. T. Day, temporary commission and appointment terminated in order to take up a temporary commission in the Regular Army. To date June 12th.

A. E. Hawker and H. G. Brackley entered as Probationary Flight Sub-Lieutenants for temporary service, with seniority of June 13th, and both appointed to "President," additional, for R.N.A.S.

### Royal Flying Corps (Military Wing).

THE following appeared in a supplement to the *London Gazette* issued on the 9th inst. :—

Wing-Commander.—Major Tom I. Webb-Bowen, Bedfordshire

### Air Raid Damage Insurance.

IN the House of Commons on Monday, Mr. Fell asked the Prime Minister if persons suffering damage to their premises from aerial raids would recover the whole of such damage from the Government, and also be able to recover the damages from insurance companies if they were insured; and, if not, and if the insurers were to be relieved from payment of losses, would the premiums be repayable, less, say, 5 per cent. for expenses.

Regt., from a Squadron-Commander, and to be temporary Lieutenant-Colonel, vice Brevet Major (temporary Lieut.-Col.) H. R. M. Brooke-Popham, Oxfordshire and Buckinghamshire L.I.; May 27th, 1915.

Flying Officers.—May 22nd, 1915: Second Lieut. Alexander C. Clarke, 3rd Batt. Duke of Cornwall's L.I., and to be seconded. Second Lieut. Humphrey M. Goode, 2nd County of London (Westminster Dragoons) Yeomanry, T.F. Second Lieut. Oliver D. Filley, Special Reserve. Second Lieut. Marwood E. Lane, Special Reserve.

The following appeared in a supplement to the *London Gazette* issued on the 10th inst. :—

Flight-Commander.—Major Clive Mellor, Royal Engineers, from a General Staff Officer, 3rd Grade, at the War Office. May 25th, 1915.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: Clive F. Collett and Stanley W. Caws.

To be Second Lieutenants (on probation): Arthur T. Whitelock; May 22nd, 1915. George E. H. Fincham; May 24th, 1915. Herbert S. Ward; May 25th, 1915. Elliott I. Bingham; June 1st, 1915.

The following appeared in the *London Gazette* of the 11th inst. :— Squadron-Commander.—Capt. Francis F. Waldron, 19th (Queen Alexandra's Own Royal) Hussars, from an Instructor, Central Flying School, and to be temporary Major whilst so employed. June 1st, 1915.

Wing-Adjutant.—Capt. Bertram C. Fellows, retired pay, Indian Army. May 17th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 12th inst. :—

General Staff Officer, 1st Grade.—Brevet Major (temporary Lieut.-Col.) Henry R. M. Brooke-Popham, Oxfordshire and Buckinghamshire L.I., from a Wing-Commander, Royal Flying Corps, and to retain his temporary rank, vice Brevet Lieut.-Col. F. H. Sykes, 15th (King's) Hussars.

Wing-Commander (Supernumery).—Brevet Lieut.-Col. Frederick H. Sykes, 15th (King's) Hussars, from a General Staff Officer, 1st Grade. May 26th, 1915.

Supplementary to Regular Corps.—Second Lieutenants (on probation) confirmed in their rank: Hamilton K. Maxwell, Sacheverell A. Hebden, Gerald S. Peacock, and Cecil Barber.

To be Second Lieutenants (on probation): Stanley T. Welch; May 26th, 1915. Gerrit Forbes; May 28th, 1915. June 1st, 1915: William H. T. Rampling-Rose, Herbert A. Oxenham, and Samuel Eric Neal.

The following appeared in a supplement to the *London Gazette* issued on the 14th inst. :—

Flying Officers.—May 31st, 1915: Second Lieut. Charles O. Fairbairn, 3rd Batt. Loyal North Lancashire Regt., and to be seconded. Second Lieut. Leo F. Page, Special Reserve.

Equipment Officer.—Major S. E. Smith, 6th Batt. Gloucestershire Regt., T.F. May 21st, 1915.

Equipment Officer (Temporary).—Temporary Lieut. C. D. M. Campbell, and to be temporary Captain. May 26th, 1915.

Assistant Equipment Officers.—Second Lieut. M. Spicer, Northamptonshire Regt., and to be seconded; April 10th, 1915. Second Lieut. E. A. E. Wood, Special Reserve; May 25th, 1915. Second Lieut. H. K. Maxwell, Special Reserve; May 28th, 1915. Capt. R. C. Donaldson-Hudson, Territorial Force Reserve; May 29th, 1915. Second Lieut. A. B. Rendall, Special Reserve; Second Lieut. G. S. Peacock, Special Reserve; Second Lieut. C. Barber, Special Reserve; Second Lieut. S. A. Hebden, Special Reserve; May 31st, 1915.

### Central Flying School.

THE following appeared in a supplement to the *London Gazette* issued on the 10th inst. :—

Instructor.—Lieut. (temporary Capt.) Eric L. Conran, 21st (Empress of India's) Lancers, from a Flight-Commander, and to retain his temporary rank whilst so employed, vice Capt. F. F. Waldron, 19th (Queen Alexandra's Own Royal) Hussars. June 1st, 1915.

Mr. Asquith: Any sums received from insurance companies by persons suffering damage to their premises from aerial raids are deducted in payment of the relief assessed by Lord Parmoor's Committee. It is not intended to repay the premiums of insurers. The possibility of a Government scheme of insurance is under consideration.

Mr. Fell asked when it was likely that the scheme would be carried through.

Mr. Asquith: There is no avoidable delay.

# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## SPECIAL COMMITTEE MEETING.

A SPECIAL MEETING of The Committee was held on Tuesday, the 15th inst., when there were present: Prof. A. K. Huntington, in the Chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, and the Assistant Secretary.

**Election of Members.**—The following New Members were elected:—

- Lieut. C. I. Blackburne-Maze.
- 2nd Lieut. Francis Leopold Mond, R.F.A.
- Lieut. Frank Bernard Halford, R.F.C.
- William Naylor Spence.
- Flight Sub-Lieut. Colin Charles Wyllie, R.N.A.S.

**Aviators' Certificates.**—The granting of Aviators' Certificates Nos. 1242-1308 was confirmed.

The following Aviators' Certificates were granted:—

- 1309 Philip Andrew Johnston (Caudron Biplane, Beatty School, Hendon). June 4th, 1915.
- 1310 2nd Air Mechanic Archibald Stuart Charles Stuart-MacLaren (Caudron Biplane, British Flying School, Le Crotoy, France). June 4th, 1915.
- 1311 Flight Sub-Lieut. Norman William George Blackburn, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). June 5th, 1915.
- 1312 2nd Lieut. Kenelm Lyall (Norfolk Regt.) (Maurice Farman Biplane, Military School, Birmingham). June 8th, 1915.
- 1313 Bernard William John Hunkins Martin (Maurice Farman Biplane, Military School, Brooklands). June 9th, 1915.
- 1314 2nd Lieut. Alan Lees (Royal West Kent Regt.) (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 9th, 1915.
- 1315 2nd Lieut. Lionel Arthur Newbold (1/2nd Batt. Essex Regt.) (Maurice Farman Biplane, Military School, Birmingham). June 10th, 1915.
- 1316 Capt. Leslie Sadler, A.S.C. (Maurice Farman Biplane, British Flying School, Le Crotoy, France). June 10th, 1915.
- 1317 Flight Sub-Lieut. Matthew Alistair Simpson, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). June 10th, 1915.
- 1318 Lieut. Helerus Andrias Van Ryneveld (Loyal North Lancashire Regt.) (Maurice Farman Biplane, Military School, Northolt). June 10th, 1915.

- 1319 William Mayne Pethybridge (Maurice Farman Biplane, Military School, Brooklands). June 11th, 1915.
- 1320 2nd Lieut. Lionel Moss, A.S.C. (Maurice Farman Biplane, Military School, Farnborough). June 12th, 1915.
- 1321 Flight Sub-Lieut. Humphrey de Verd Leigh, R.N.A.S. (Grahame-White Biplane, Grahame-White School, Hendon). June 13th, 1915.

## THE FLYING SERVICES FUND

administered by

### THE ROYAL AERO CLUB.

THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

#### Subscriptions.

	£	s.	d.		£	s.	d.
Total subscriptions received to June 9th, 1915	9,147	7	0	Miss E. Bairdsmith...	1	0	0
Albert Jones (Second contribution) ...	50	0	0	Employés of Messrs. A. V. Roe & Co., Ltd., for 4 weeks ending May 28th, 1915 ...	25	18	8
Albert C. Pain ...	1	1	0	D. A. Merion-Smith (Third contribution) ...	0	5	0
Miss A. Elias ...	1	10	0				
W. M. Shirreff ...	2	2	0				
John A. Allen ...	1	1	0				
Tommy ...	0	5	0				
G. H. Cuthbert-Gundry	2	2	0				
Mrs. Charles Temperley ...	10	10	0	Total, June 16th, 1915 ...	9,243	1	8
166, Piccadilly, W.							

B. STEVENSON, Assistant Secretary.



One of the latest Thomas military biplanes, with 90 h.p. Curtiss engine, just off for a trial spin at Ithaca. Incidentally, this view gives an idea of the splendid facilities possessed by the Thomas Brothers at Ithaca. They have two large aerodromes beside Lake Cayuga, one being reserved for testing new machines and the other for the flying school, while for flying-boat work, Lake Cayuga, which is 40 miles long and four miles wide, is available. The hills seen in the distance are at the other side of the lake.





THINNING THE GERMAN AIR FLEET.—The attack in the early morning, by Flight Sub-Lieutenant achievement Lieutenant Warneford was awarded



JUNE 18, 1915.

FLIGHT



J. Warneford, V.C., piloting a Morane "parasol," on the Zeppelin airship, near Ghent, on June 7th. For this deed by the King in record time after the deed.

## THINNING THE GERMAN AIR FLEET.

ON the two previous pages we publish this week an interesting pictorial record by Mr. Algernon Black, of the destruction of the Zeppelin airship by Flight Sub-Lieut. Warneford on June 7th, near Ghent. Below we also give the official descriptions of the incident which earned both the V.C. and the Legion of Honour for Sub-Lieut. Warneford, and these are supplemented by a few further details from other sources, both regarding this and the destruction of the airship shed at Brussels, by Flight-Lieuts. Wilson and Mills.

### Flight Sub-Lieutenant Warneford's Honours.

In the *London Gazette* issued on Friday there was the following:—

"The King has been graciously pleased to approve of the grant of the Victoria Cross to

"Flight Sub-Lieutenant Reginald Alexander John Warneford, Royal Naval Air Service, for the conspicuous act of bravery specified below:

"For most conspicuous bravery on June 7th, 1915, when he attacked and, single-handed, completely destroyed a Zeppelin in mid-air. This brilliant achievement was accomplished after chasing the Zeppelin from the coast of Flanders to Ghent, where he succeeded in dropping his bombs on to it from a height of only one or two hundred feet. One of these bombs caused a terrific explosion, which set the Zeppelin on fire from end to end, but at the same time overturned his aeroplane and stopped the engine. In spite of this he succeeded in landing safely in hostile country, and after 15 minutes started his engine and returned to his base without damage."

The following note was issued in Paris on Saturday:—

"The Minister of War to-day handed the Cross of Chevalier of the Legion of Honour to Flight-Lieutenant Warneford, of the British Army.

"Lieutenant Warneford is the officer who, while flying recently over Belgium at a great height, encountered a Zeppelin armed with machine guns. He descended to within 60 metres of the balloon and blew it up with bombs. Lieutenant Warneford's machine turned over, and he had to land, as one of his tanks had been pierced. He at once emptied the leaking tank into the second tank and resumed his flight amid a hail of bullets from the German troops, who had run up in the meanwhile. He was on the ground 35 minutes."

### Flight Sub-Lieut. Warneford's Story.

THE following account of the exploit, written, it is stated, from details supplied by Sub-Lieut. Warneford, appeared in *Le Temps* of the 14th inst.:—

"On his return from this magnificent exploit, Sub-Lieut. Warneford landed at Cape Gris-Nez, having flown over part of the North Sea in order to make sure of escaping the Germans. Some people knowing English were able to approach the Sub-Lieutenant, and our Calais correspondent has obtained from his own mouth the following interesting account of the audacious raid.

"In the middle of the night between Sunday and Monday three aviators had departed for a reconnaissance flight over Belgium with the intention of destroying if possible the airship sheds, the location of which was known. The squadron was formed by Lieuts. J. P. Wilson and J. S. Mills and Sub-Lieut. Warneford. About half-past two in the morning the three aviators arrived near Brussels, and lost no time in making for the hangar where the Zeppelin was believed to be stationed, at Evere.

"After having rapidly assured themselves that their approach had not been noticed, the Lieutenants Mills and Wilson resolved to attempt to blow up the shed, and started to fly over it. They descended to within a short distance so as to make sure of not missing their mark. About fifteen bombs were then dropped, which brought gigantic flames from the roof. The desired result had been achieved. This exploit accomplished, the two lieutenants returned by air to their station, leaving Sub-Lieutenant Warneford to continue his reconnaissance.

"Towards three o'clock, just as dawn was breaking, he saw in the distance the silhouette of a Zeppelin between Ghent and Brussels. The aviator prepared for the encounter by climbing to as great a height as possible in order to fly over the aerial monster, and thus get out of range of her machine guns.

"He succeeded in this manoeuvre, descended to within about 30 metres above the Zeppelin and dropped six bombs. The sixth

hit the dirigible squarely. A terrific explosion followed producing such atmospheric disturbances that the English aeroplane was turned completely over. The aviator looped the loop involuntarily, but was lucky enough to be able to right his machine. He saw the Zeppelin lying on a roof, where it was totally burnt up. From the height of the fall and its violence there can be no doubt that the crew were killed. Having assured himself of this, the aviator returned on his way to the coast and landed at Cape Gris-Nez, after passing Dunkerque and Calais."

### The Success of Flight-Lieuts. Wilson and Mills.

FROM information which has now come to hand, it appears that there was in fact a Zeppelin inside the shed at Evere, near Brussels, which was bombed by Flight Lieuts. Wilson and Mills on the 7th. Information received by the *Telegraaf* from Brussels stated that it was a Parseval, but a later message said that the destroyed airship was the LZ 38, one of the latest Zeppelins. The *Handelsblad* stated that seven big railway trucks conveyed the debris of the burnt Zeppelin back to Germany.

*Le Temps*, on Saturday, printed the following account of the successful attack from an eyewitness who had just arrived in Paris from Brussels:—

"Favoured by a mist, the Allied aviator arrived over the town, but as soon as he was perceived he was violently but unsuccessfully shelled by German guns.

"The aeroplane was manoeuvring very high and slowly in wide circles, as if striving to locate exactly the position of the hangar. Meanwhile, the Germans tried to get out the dirigible, which was not a Parseval, but a Zeppelin airship. Hardly had it emerged more than a few yards when the aviator was suddenly seen to dive straight down within a few hundred yards of the shed and drop three bombs, which exploded with a terrific noise. A few seconds later the airship blew up with a still louder report, while huge tongues of flame shot into the air from the blazing hangar.

"Besides the Zeppelin, five Taubes in the shed were burnt, and nineteen German soldiers were killed."

### Suppressing the News in Germany.

VERY little has been allowed to appear in the German Press on the matter. In some of the German papers of last Friday the original Admiralty announcements were reproduced, with the statement that no German official confirmation had been received. In the *Wolff Bureau* version of the French *communiqué* of the previous day the statement that General Joffre had proposed that Sub-Lieut. Warneford should be given the Legion of Honour for the destruction of the Zeppelin was permitted to remain.

In this connection it is not uninteresting to notice the following comment in the *Vossische Zeitung* of June 9th, on the destruction of the Italian airship:—

"In their flights to England, and also in their attacks upon Calais, Paris, and other French towns, our airships have repeatedly been attacked by enemy aeroplanes, and assuredly they gave the aeroplanes opportunity enough to develop superior speed. But neither the English nor the French have succeeded in destroying one of our Zeppelins. The Zeppelins always shook off the enemy airmen with ease, and safely reached their distant home ports. The Austrian airman has been the first to succeed in bringing down an airship, but even the newest Italian airships do not possess the speed of the German Zeppelins."

### A Letter of Thanks.

MRS. A. CORKERY, the mother of Flight Sub-Lieut. Warneford, V.C., writing from White Lodge, Runfold, Surrey, has sent the following letter of thanks to the press, in reply to the shoal of congratulations which she has received upon her son's feat:—

"I should like to convey my thanks through your newspaper to the numerous people who have written to me to congratulate me on my son's, Flight Sub-Lieut. R. A. J. Warneford's, great achievement in bringing down the Zeppelin, and on his getting the V.C. and Legion of Honour.

"I find it quite impossible to answer all letters personally which I receive from his many admirers, and must ask them to kindly accept this acknowledgment."



## EDDIES.

AFTER numerous delays caused by the various repair jobs that are inevitable at a flying school, the Hall *fuselage* biplane has at last been completed and put through her paces. During the very first flight the new biplane

there is now only a small fixed stabilising plane and two large elevator flaps. In the hands of so experienced a pilot as Mr. Hall this sensitiveness is, of course, no drawback, rather the reverse, and should pupils prefer a little



THE LATEST TRACTOR BIPLANE AT THE HALL FLYING SCHOOL, HENDON.—Three-quarter view from the front.

was found to handle remarkably well, being very fast, about 62 m.p.h., I understand, and climbing splendidly. Since then Mr. Hall has been for a number of jaunts to make sure that the machine is in absolutely perfect trim before turning her over to the more or less tender mercy of the pupils. On one occasion last week he put her climbing capabilities to the test, and came down from a good altitude in a series of beautiful spirals, mainly to see if there should, by any chance, be a tendency to spin.

less of it, it would be quite a simple matter to fit a slightly larger tail plane. The Hall equipment now includes machines ranging in power from 35 to 50 h.p., and pupils will be able to proceed by progressive stages from the smaller, lower powered biplanes to the higher powered and fast ones. A good idea of the new mount may be gained from the accompanying photographs.

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The prominence obtained by aircraft in the present



THE LATEST TRACTOR BIPLANE AT THE HALL FLYING SCHOOL, HENDON.—Three-quarter view from the back.

This was conspicuous by its absence, and about the only objection that could possibly be raised is that the machine is somewhat sensitive on the elevators. This is hardly to be wondered at when it is remembered that instead of the large flexible tail plane fitted previously,

war has resulted in a keen demand by the general public for news and pictures regarding the doings of Allied and hostile aviators. As most of the staff and correspondents of the lay Press had not taken much trouble to familiarise themselves with this new arm before the out-

break of war, the stories and illustrations sent home are frequently of a highly amusing nature from the point of view of technical accuracy. That all German machines should be termed Taubes, irrespective of type, is therefore not much to be wondered at, and, as pointed out in "Eddies" some time ago, even German aeronautical journals have lately accepted the name and are using it to denote all military German machines. When one correspondent states that certain types of aircraft reach "unattainable heights," one only smiles and puts it down to a slip of the pen, or a pardonable ambition to get into "Jimmy" Percy's next "Bull book." Humorous as are some of the written accounts, the illustrations that accompany them are often even more so. The illustrators of aviation incidents of the war in several cases show a fine disregard of constructional details, such as for instance leaving out nearly half of the chassis struts, or fitting long skids and no wheels to Morane monoplanes. One of the worst "howlers" that I have as yet come across was brought to my attention by a reader, who was good enough to send me a page from one of the many catch-penny war publications that have sprung up since the outbreak of hostilities. The photograph in question shows a Morane "Parasol" in the foreground, while behind it and facing it is a M. Farman biplane. From the somewhat bewildering perspective of the wings of the two machines the writer of the title has been inspired to a highly entertaining explanation embodying the information that it is "a Morane Parasol, a new and particularly effective type of huge and powerful French triplane." This title is made all the more fascinating by the fact that the photograph appears at the foot of a page written by a writer who is not altogether unknown in the aviation world. There are times when one can scarcely help questioning the advisability of having the aviation part of the war illustrated.

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As a rule, I thoroughly enjoy the various exhibition flights by the Hendon pilots at week ends, but the other Saturday I happened to witness a piece of flying that I willingly admit gave me cold feet. Time after time the old five-seater biplane made short flights with four people up, staggering along with her tail down, and going out over the houses in Collindale Avenue at a particularly low altitude. Should the engine have failed, it did not seem as if it would have been possible to reach the aerodrome, and the old five-seater is not exactly the most suitable 'bus for landing in a small field. The pilot's

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## FLYING AT HENDON.

FLYING at Hendon last week-end was both varied and plentiful. On Saturday, which was fine though windy, the proceedings opened with a flight by J. H. Moore on his 45 h.p. L. and P. biplane, and one by M. Osipenko on the 50 h.p. G.-W. school 'bus. Moore made a second trip immediately after, whilst Osipenko started a busy afternoon's passenger-carrying. J. S. B. Winter then went up on the G.-W. 'bus, and W. Birchenough tested a Maurice Farman biplane. C. B. Prodder next got going on the 60 h.p. (Wright) Beatty biplane, and Marcus D. Manton took up a passenger on the 50 h.p. G.-W. 'bus. How quickly the London and Provincial Co. can effect a repair was then demonstrated, when Moore, after completing another flight on his L. and P. biplane, unfortunately smashed a strut through colliding

faith in the 100 h.p. Green engine is highly flattering to its makers, but even a Green can occasionally get a little bit fractious. So long as the live load consists of pilot and mechanics, who, one must suppose, realise the possibilities, no warning should be necessary, but when it comes to taking up passengers who are not aware of the risks they are running, it is time that the practice was reconsidered. Hendon's record has been spotless in this respect up till now, and no end of harm might be done should a forced landing in the fields adjoining the aerodrome result in a nasty mix up. It is with this in view that I venture to plead for the discontinuance of passenger carrying on the five-seater unless it be kept within gliding distance of the aerodrome.

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Little has been heard recently of Collins P. Pizey, the well-known Bristol pilot, who was lent by the British Government to start and organise a flying school in connection with the Greek Navy, except that in the list of aeroplane pilots' certificates granted by the Royal Aero Club there appear several taken at the Greek Naval School. I notice, however, a telegram from Athens, dated June 13th, in *Le Temps*, which states that "Capitaine de frigate Paysie, of the English Naval Commission, has died of dysentery, and that the body will be taken to Athens, where the funeral will take place on Monday." Unfortunately there seems to be no doubt that it refers to "Little Happy" Pizey who did such splendid work in connection with the Bristol Schools at Brooklands and Salisbury Plain a year or so back, and who will be in the minds of a very large number of FLIGHT readers.

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When the Northern Aircraft Co. took over the sheds and machines of the Lakes Flying Co. it soon became evident that the activities of the new firm would rapidly outgrow the then existing accommodation. Since then the number of pupils has steadily increased until at the present time the school 'buses available are no longer sufficient to carry on the instruction work at a satisfactory rate, in spite of such time-saving devices as fast motor boats, from which pupils change places on the machines without stopping the engine, and therefore without the delay caused by swinging the propeller before each flight. It hardly, therefore, comes as a great surprise to hear that several new machines will be added to the school shortly, whilst additional hangars will be provided for housing them and for extensions to the works. All of which sounds like a further great increase in Windermere "tickets."

"ÆOLUS."

with the railings. A spare strut was immediately procured, and within a few minutes the machine was up again. In the meanwhile flights were made by Prodder on the 60 h.p. Beatty, W. Roche-Kelly on the 50 h.p. Beatty, Manton on the 50 h.p. G.-W., and G. Virgilio on the 50 h.p. Ruffy-Baumann, whilst Osipenko took up three passengers on the 100 h.p. G.-W. five-seater. Two more trips were made by Moore on his L. and P. biplane, and Virgilio also did some stunting on the 50 h.p. Ruffy-Baumann. J. L. Hall then came out on the new 50 h.p. Hall tractor biplane that has just been built in his hangar. This machine, which may be described as a "fuselage Caudron," not only shows a good turn of speed, but climbs exceptionally well. It also lands quite as slowly as the 35 h.p. Caudron, and so should prove a



In Play, as in War, "Tommy" Supports his Comrade.—A group of convalescents watching the flying at Hendon.



useful 'bus for school work. Amongst the many passengers taken up during the afternoon was a wounded soldier, who said he thought he would much rather be up in an aeroplane than on the ground—"They can't hit you up there, but you are pretty sure to be hit down below, especially by fragments of anti-aircraft shells!"

Sunday was another busy day, and the following is a brief log of the afternoon's proceedings:—M. Osipenko made one flight on the 50 h.p. G.-W. school 'bus, and

two on the 100 h.p. G.-W. aero 'bus; Marcus D. Manton four flights on the 50 h.p. G.-W. biplane; C. B. Prodger two on the 60 h.p. (Wright) Beatty biplane; J. H. Moore five on 45 h.p. L. and P. biplane; J. L. Hall one on 45 h.p. Caudron biplane; W. Roche-Kelly one on 50 h.p. Beatty biplane; P. A. Johnston one on 45 h.p. Beatty-Caudron biplane; J. S. B. Winter nine on 50 h.p. G.-W. biplane; E. Baumann three on 50 h.p. Ruffy-Baumann biplane. Most of the above pilots also took up passengers.



## FROM THE BRITISH FLYING GROUNDS.

London Aerodrome, Collindale Avenue, Hendon.

**Grahame-White School.**—Work by Probationary Flight Sub-Lieutenants last week comprised:—

Sunday, straights with instructor: Cadbury, Linnell, Hardman, Pearson, Watkins, and Wyllie. Circuits with

instructor: Simpson. Circuits alone: Leigh. Straights alone: Pennington and Wyllie.

Monday, straights with instructor: Cadbury, Linnell, and Watkins. Straights alone: Linnell, Pearson, and Pennington. Circuits: Simpson.



After Work, Recreation.—Mr. Marcus D. Manton about to take a wounded soldier for a trip in the air at Hendon. Note the comrade who is wishing him a melo-dramatic farewell.

Tuesday, straights with instructor: Cadbury, Linnell, Hardman, Pearson, Penley, Sievking, and Watkins.

Wednesday, straights with instructor: Cadbury, Hardman, Pearson, Penley, Sievking, Watkins, and Wyllie. Straights alone: Watkins.



Brigadier M. E. Franchomme, who has just taken his *brevet* at the London and Provincial School, Hendon. Brigadier Franchomme is a member of the Belgian King's Guides regiment, and is attached to the Royal Belgian Flying Corps. He was in charge of the Belgian armoured cars in Antwerp.

Thursday, straights with instructor: Hardman, Linnell, and Sievking. Straights alone: Linnell.

Friday, straights with instructor: Cadbury, Hardman, Pearson, Penley, Sievking, and Watkins. Straights alone: Linnell. Circuits: Leigh.

Saturday, straights with instructor: Hardman, Pearson, Penley, Sievking, and Watkins. Straights alone: Cadbury and Wyllie. Circuits: Cadbury and Linnell. Circuits and eights: Leigh.

*Brevet* taken during week:—Probationary Flight Sub-Lieutenant Simpson, June 10th. Instructors during week: Messrs. Manton, Russell, and Winter.

**Beatty School.**—The following pupils were out during last week, accompanied by the instructors:—Messrs. Arbon (28 mins.), Banks (27), Bond (25), Bush (9), Chalmers (55), Crossman (18), Delves (35), Eaton (55), Fawcett (20), FitzHerbert (30), Fox (8), Holland (60), Jones (59), King (51), Morgan (30), Robb (16), Ross (54), Rutherford (8), Spicer (10), Tomlinson (43), Vickers (16), Whincup (10), Theo (9), Blandy (64), Nicholson (12), Boyle (36), Kenworthy (100), and G. F. King (14). The instructors were Messrs. G. W. Beatty, W. Roche-Kelly, C. B. Prodger, and P. A. Johnston, the machines in use being Beatty-Wright dual control and single-seater propeller biplanes and Caudron tractors. Exhibition flights were given on Thursday, Saturday, and Sunday, and 4 passenger flights were taken.

Mr. G. F. King, who joined up with the school last week, and Mr. Blandy, who joined the previous week, are both doing well on the 45-50 h.p. Caudron biplane, and will take their certificates at the next opportunity. Mr. Reginald Kenworthy is taking extra practice, and on his second flight attained a height of 3,000 ft., flying very consistently.

**Hall School.**—Considering the inclement weather experienced during last week, the pupils at the Hall school put in a good amount of practice. Rolling and straights with Instructors C. M. Hill and Herbert James: Messrs. Cook (41 mins.), Hatchman (80), Snowdon (63), Hamer (26), Booker (50), Scott (31), Millbourne (41), Bayley (34), Russell (38), Lieut. Grant (53), Mr. Yonge (77), Mr. Gay (64), Lieut. Phillpotts (50), Lieut. Raymond-Barker (31). Straight flights, circuits, figure eights, &c.: Messrs. Furlong (34 mins.), Minot (12), Snook (28), Mitchell (6). The following pupils are progressing very favourably and should shortly qualify for their *brevets*: Messrs. Snook, Furlong and Minot.

Exhibition flights were made by Instructors Stevens and Hill on tractor Nos. 1 and 2. Mr. J. L. Hall was out several times during the week on the new Gnome fuselage tractor No. 6. Machines in use during week were No. 12, 2, 5 and 6 Hall tractors.

Things we want to know: Why a certain pupil turned up for practice early the other morning attired in evening dress; and whether burnt castor oil improves the condition of such clothing?

**London and Provincial Aviation Co.**—Instructors during last week: Messrs. W. D. Smiles, M. G. Smiles and W. T. Warren.

On Monday Mr. Bell took excellent ticket; Mr. Scott rolling.

Tuesday and Wednesday, Messrs. Jacques, Minter, Dower and Scott rolling.

Thursday, the new 40 h.p. London and Provincial



M. E. Roobaert, another Belgian subject, who recently passed for his ticket at the Ruffy-Baumann School, Hendon.

biplane was taken up by Mr. M. G. Smiles for its first flight during the evening and climbed splendidly. Mr. Smiles reached 3,500 ft. Messrs. Sykes, Jacques and Dower rolling; Messrs. Minter and Irwing straights.



Friday, Mr. Nethersole straights; Messrs. Dower and Sykes rolling; Mr. Turner flight on 40 h.p.

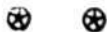
Saturday, Messrs. Sykes and Scott rolling; Mr. Minter straights; Messrs. Turner and W. D. Smiles flights on 40 h.p.

Sunday, Messrs. Sykes, Scott, Conner, and Adams rolling; Mr. Minter straights.

**Ruffy-Baumann School.**—Last week was an exceptionally good week for practical flying.

Monday, on the 60 h.p. Ruffy-Baumann biplane the following pupils were practising: Hudson (8 mins.), Bell (12), Dixon (10), Robertson (8), Bell (12), Wallis (10), Dixon (10), and Brand (8).

Wednesday, on the 60 h.p. R.B. biplane: Crawford (10 mins.), Wilson (8), Hudson (8), England (16), Bell (15), and Boisson (5). Four passengers came over from Luton for passenger flights, and all four were taken up in the afternoon. On 50 h.p. Caudron type: Crawford (20), Cole (5), and Dixon (10).



#### Trawlers Sunk by German Airship.

ACCORDING to information received from Amsterdam on the 10th inst., the Dutch fishing smack "M.A. 73" had arrived at Maassluis with eight survivors of the British smacks "Welfare" and "Laurestina," of Lowestoft, which, while fishing in the North Sea, were attacked and sunk by a Zeppelin.

#### Italy Captures German Aeroplanes.

ON unloading the "Bayern," which after lying in Naples since early in August has been seized by the Italian Government, some aeroplanes in parts, together with guns and machine guns, were found hidden in the hold. The "Bayern" left Hamburg for the Far East on July 3rd, twenty-five days before Austria declared war on Serbia. Early in the war the German Government demanded permission to remove the munitions without saying a word about the guns and aeroplanes.

#### A Spanish Fatality.

ACCORDING to a message from a *Le Temps* correspondent at Madrid, the civil aviator Julio Perez had a fall at the Getafo Aerodrome near Madrid on June 13th, and received injuries from which he died later in the day.

#### Double Fatality in Switzerland.

A *Morning Post* correspondent at Berne, on the 4th inst., reported that two Swiss aviators, Lieutenant Moritz Vollenweider and Corporal Peter Probst, when returning from Berne to the airshed at Dübendorf, fell and were killed instantaneously. The scene of the accident was only about half an hour's flight from Dübendorf.

#### Mr. Lloyd George at the "Bristol" Works.

IN connection with his campaign for speeding up the production of munitions, Mr. Lloyd George, the new Minister of Munitions, visited Bristol on Saturday last, and spent some time at the works of the British and Colonial Aeroplane Co., makers of the Bristol biplanes. Mr. Lloyd George motored out from the city to Filton, where the works are situated, with Sir George White, Bart., secretary of the company, and he was received by Mr. Stanley White, the managing director, and Mr. H. White-Smith, the secretary. He spent some time watching the work of erecting aeroplanes, being conducted through the extensive shops by the works manager, Mr. Herbert Thomas, who, it will be recalled, is an experienced pilot. The Minister of Munitions also saw some of the machines being tested in the air.

Afterwards the workmen were assembled, and Mr. Lloyd George addressed them as follows:—

"I wish to thank you on behalf of the Government for the excellent work you are doing for the country. There is no more important work than the work you are doing. As I was telling the committee in Bristol, you will find in Europe no finer airmen than the British aviators, but we want more aeroplanes. The Germans have many more than we have. One British aviator goes as far as about two or three Germans, but at the same time we want more aeroplanes, and I am so glad to see you working at them here, and working so well, and working so skilfully at this exquisite work. It is the first time I have visited a factory of this kind, and I have been extraordinarily interested in seeing the work you are doing. I am exceedingly obliged to you, and on behalf of the Government I thank you. The more of these machines you can turn out, the better it will be for our brave fellows in France. It is the only way

Thursday, on 60 h.p. R.B.: Hudson (12 mins.), and Sykes (5).

Friday, on 60 h.p. R.B.: Hudson (10 mins.), Boisson (5), Leong (10), Sykes (10), and Bell (10). On 50 h.p. Caudron type: Wilson (6), and Wallis (4).

Saturday, on 60 h.p. R.B., Mathewson (9 mins.), May (10), Sykes (9), Brand (9), Bell (10), Leong (10), Boisson (5), Hudson (11). On 50 h.p. Caudron type: Boisson (6), Bell (16), Brand (6), Sykes (6), England (6), Wilson (6), Mathewson (6), Cole (6). One passenger was taken on this day.

Sunday, on 60 h.p. R.B., Mathewson (5 mins.), Sykes (8), Bell (10). On 50 h.p. Caudron type: Bell (6 mins.), England (4), Cole (6), Sykes (6).

Mr. T. C. Wilson is a new pupil, and one of the most promising the school has yet had. During his first lesson all his movements were perfect, and the school is looking forward to making an exceptionally good pilot of him.

Instructors: Baumann, Ruffy, Virgilio and Winchester.



we can detect the hidden gun emplacements of the enemy. Those splendid aviators and observers find out exactly where the trenches and guns are, and then our artillery get to work, and when they have smashed away defences, our infantry will turn the Germans out of the trenches; but your job is the first."

Just before Mr. Lloyd George left the works to return to Bristol he saw several Bristol biplanes arrive from Salisbury Plain.

#### The Theatrical Garden Party.

SO many calls are being made for deserving causes, as a result of the war, that it is an onerous duty for the public to make selection with due regard to their means. One which generally commends itself at this time of the year is the Theatrical Garden Party, held annually in the Royal Botanic Gardens, Regent's Park, N.W., the proceeds of which go to relieve the orphans of those in the theatrical world who may have fallen by the way. That the profession has been sorely hit by the war is no secret, and it is therefore to be hoped that very generous support will be given this year on the great day. From the public's point of view, there is mighty little charity about it, as a charge of 3s. only is made for tickets, which can be obtained at any of the theatre box offices. Against this must be set the advantage of seeing an absolute plethora of entertainments contributed to by practically every well-known actor and actress who, under the nature of their engagements, can assist, barring those who are at the Front. Grand music, playlets, sports and every kind of attraction form a continuous cycle of amusement all day long, and perhaps no better offer exists for July 20th, than the open invitation to the great garden party. Merely to mention one little item in the attractive programme, there is to be a Grand Golfing Tournament, for which Messrs. James Braid, George Duncan, Alexander Herd and J. H. Taylor are absolutely booked to meet a team of distinguished actors—led by Sir George and Lady Alexander, and Miss Irene Vanbrugh. So all those who can should spare a few hours for relaxation on the day, and help along a charity which has done and is doing much good in a quiet way.

#### The Aircraft Manufacturing Co.'s Headquarters.

IN future the headquarters of the Aircraft Manufacturing Co., Ltd., who build Henry and Maurice Farman aeroplanes and seaplanes in this country, as well as the de Havilland biplane, will be at Edgware Road, The Hyde, Hendon, N.W. The telegraphic address remains as before "Airmanship, London," but the telephone call now is Kingsbury 22 (3 lines). The London office will still remain at 47, Victoria Street, but as the business will be chiefly conducted from the new address all communications should be addressed to Hendon.

#### A Correction.

FROM the photographer, Mr. F. N. Birkett, we learn that owing to a slip, the photograph which appeared on p. 415 of our last issue was wrongly described as Flight Sub-Lieut. A. R. Cox, R.N.A.S. It really showed Flight Sub-Lieut. W. D. Wain, R.N.A.S., who recently took his ticket at the Grahame-White School at Hendon.

#### To 'Phone Handley Page, Ltd.

A NOTE should be made by those concerned of a re-arrangement of the telephone numbers of Messrs. Handley Page, Ltd., at their works, 110, Cricklewood Lane, London, N.W. In future they will be Hampstead 7420 (3 lines).

# AIRCRAFT AND THE WAR.

THE following Exchange message was received from Athens on the 8th inst. :—

"Two of the Allies' aeroplanes flew over Smyrna yesterday and travelled as far as Bournova and Menemeni. The fighting in the peninsula continues violently, and the warships of the Allies are pursuing their bombardment of the Asiatic coast."

From Nish the following Reuter telegram was received on the 8th inst. :—

"A German aeroplane flying over Egri Palanka, near the new Bulgarian frontier, was obliged to come down, owing to a motor defect. The occupants, a German officer and a non-commissioned officer, who had certain official papers on them, were arrested, and the aeroplane was seized. An enemy aeroplane flew over Piarevtz and dropped nine bombs. Several persons were injured. Torrential rain has done great damage in the region of Timok, Bitolj, and Tikvesh."

An official statement issued in Vienna on the 8th inst. said :—

"The naval command states that the hostile airship Citta di Ferrara, while returning from Fiume at six o'clock this morning, was shot at and destroyed by naval aeroplane L. 48 (pilot, Naval Lieutenant Glasing, and observer, Naval Cadet von Fritsch), southwest of Lussin. The two officers and five men of the airship crew were captured."

Another statement issued in Vienna stated :—

"The naval flying machine 'L. 47'—pilot, Lieut. Banfield; observer, Naval Cadet von Strobel—this morning successfully bombarded the balloon shed at the Murano Camp, near Venice, and also an enemy destroyer, causing several fires. A machine gun was used against the troops under canvas."

Writing to the *Daily Telegraph* from Rome on the 9th inst., Mr. A. T. Massey said :—

"An Italian dirigible yesterday made a successful raid upon the Austrian coast, and the Admiralty has received an official report that bombs were dropped on Fiume and other Austrian towns. But, whilst returning, the dirigible fell into the sea, near the Isle of Lussin, and caught fire. The crew immediately destroyed the motor to prevent its use by the enemy. The crew were saved, but are prisoners. The lost dirigible forms part of a considerable Italian air-fleet. The navy has paid great attention to the air-service, and possesses what is to be believed the most efficient dirigible in the world, smaller than the Zeppelins, but possessing a high speed, a large radius of action, and the ability to reach great altitudes. There are ample well-trained crews."

"The dirigibles have proved their efficiency already by heavily bombarding Pola, Monfalcone, and other Austrian positions, and it is because of the enterprise and daring of the air-service that the Austrian fleet lies hidden behind the islands of the Dalmatian Archipelago."

A Reuter message from Venice, dated June 9th, stated :—

"The Italian airship which flew on Tuesday over Fiume bombarded the torpedo works and submarine factory originally founded by Mr. Robert Whitehead and caused damage to the Danubius navy yard, where the Dreadnought 'Szent Istvan' has been built. The airship threw bombs on a factory near the town, where submarines sent from Germany in pieces by train were being put together, but having remained too long on the way back saw the impossibility of reaching the Italian coast. Being closely pursued by Austrian torpedo-boats the Italian airmen set the airship on fire that it might not fall into enemy hands. They then threw themselves into the sea and were made prisoners."

The *Daily Mail* correspondent at Rome, writing on June 9th, said :—

"The Italian airship attack on Fiume was important, as large stores of oil-fuel and petrol are there. A western portion of the harbour is called 'Petrol Harbour.' It was probably here that the Italian airship discharged its bombs."

The following note was officially published in Vienna on the 10th inst. :—

"In the Balkans one of our air squadrons early yesterday morning successfully bombarded the arsenal and explosives factory at Kragujevatz, causing two fires. Our airmen returned safely."

The *Daily Mail* correspondent at Vevey on the 10th inst. reported the following :—

"From information received from a German source the Bâle

papers state that during reconnaissances towards Belfort (French south-eastern front) German airmen saw large movements of French troops."

In a Central News message from Amsterdam on the 11th inst., it was stated :—

"A German aerodrome near Fresnoy was attacked by aircraft, and considerable damage caused by bombs."

In a note issued by the Turkish Main Headquarters on Monday, it was stated :—

"On May 24th an English cruiser before Moyleh, near Endina, on the Red Sea, sent up a flying machine. The aviator was shot down."

An Exchange message from Rome on Monday stated :—

"A message from Geneva states that an Austrian dirigible, caught in a storm, was destroyed through the force of the wind dashing the airship against a high mountain at Adanello."

The *Daily Mail* correspondent in Paris sent the following story on Monday :—

"A wonderful feat has been performed by a French airman, who not only, by the trick of shamming death, shot his two German air pursuers, but also succeeded in capturing their machine and returning with it intact, as well as his own, to the French lines."

"Lieutenant P— was reconnoitring with an observer, Adjutant L—, in the Woevre region with the object of discovering the exact emplacement of enemy batteries. While so engaged his machine was the object of a vigorous shelling by the Germans, who ultimately sent up an Aviatik machine to attack him. The Frenchman by successful manoeuvring flew over the Germans, who promptly took flight. An accident to the French motor obliged the airmen to descend abruptly. The enemy pilot, believing the Frenchman to be *hors de combat*, landed near them. Lieutenant P—, simulating death, allowed the German pilot to approach, and then suddenly shot him through the head and ran to the Aviatik and shot the observer. The Frenchman returned to camp, the lieutenant flying in the captured German machine and his brother officer piloting the French machine."

In the German "wireless" news sent out on Tuesday there was the following :—

"To-day the open town of Karlsruhe, which is far from the theatre of operations and is not in any way fortified, was attacked with bombs dropped by an enemy airman. As far as is yet known 11 citizens were killed and 6 injured. No military damage was caused."

"One of the enemy aircraft was brought down by one of our military airmen and the occupant killed. Another enemy aircraft was obliged to land near Schirmeck."

Messages from Karlsruhe, received in Amsterdam *via* Berlin, stated :—

"This morning five enemy aviators bombarded Karlsruhe for three-quarters of an hour. Several persons were killed or wounded. Material damage, of no military importance, was done at numerous places. The hostile aeroplanes remained over the town at a great height from 6.45 till eight o'clock."

"The central districts near the castle suffered mostly. The Margravian Castle was also hit by a bomb."

In the German "wireless" news sent out on Wednesday there was the following :—

"During an air attack on Karlsruhe nineteen persons were killed and fourteen seriously injured. Numerous people were slightly wounded."

"The population is calm but embittered on account of this senseless procedure."

A Central News message from Amsterdam on Tuesday stated :—

"Two Zeppelins were yesterday seen over Belgium, near the Dutch frontier. One descended between Antwerp and Herenthals, and did not again ascend. The other disappeared in a westerly direction at high speed."

The Rome correspondent of the *Petit Parisien* on Tuesday reported :—

"A fourth Austrian waterplane has been captured off the Italian coast. It had started from Pola with the object of dropping bombs on Venice, but had to descend on the return journey, and was captured by an Italian patrol-boat."



# Models

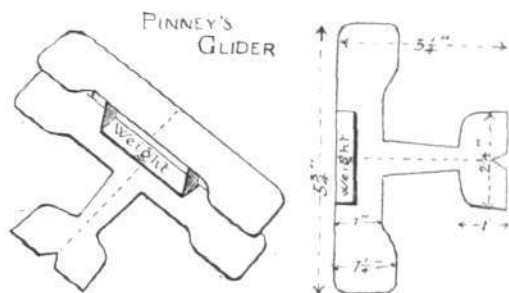
Edited by V. E. JOHNSON, M.A.

## Some Experiments with Gliders.

WE have received the following interesting letter from Mr. K. W. G. Pinney:—

"Dear Sir,—Since I have taken in FLIGHT I have noticed several articles connected with paper gliders, but in each case the experiments were carried out with the monoplane type. Recently I made a few simple experiments with biplane and monoplane gliders to observe their respective qualities.

"The gliders used were made of thin paper, both having exactly the same shape of plane and aspect ratio, the only difference being



Mr. K. W. G. Pinney's glider.

that the biplane had a little extra weight on it to obtain the correct gliding angle. Both gliders had a very small positive dihedral angle.

"Tests were first carried out indoors, and later outdoors in a light breeze. Although the monoplane gave perhaps the best results, the biplane was decidedly more graceful to watch.

"In your last issue I see that in Mr. Leeming's excellent article it is shown that the short fuselage gives the best gliding results, and in my own experience I have always found that to be the case.

"The table gives the results obtained:—

### Gliding Tests in Calm Air.

	Gliding Angle.	Speed.	Long. Stability.	Lat. Stability.
Monoplane	Very good; about 1 in 9	Fast	Fairly good	Good
Biplane	Not quite so good; about 1 in 8	Very slow	Very good	Good

### Wind Tests.

	Against Wind.	With Wind.
Monoplane	Fair stability; very flat gliding angle	Poor stability; gliding angle not so good
Biplane	Very good stability; good gliding angle; exceedingly slow	Fair stability; poor gliding angle

It would have been extremely interesting if our correspondent had constructed a third glider of biplane form with staggered planes,

in order to see if this did not give as good a gliding angle as in the case of the monoplane.

## Mr. J. R. Barrett's Compressed-Air-Driven Model.

"I am sending you herewith," writes the above, "two photos. of my compressed-air-driven machine, which may interest some of your readers.

"As will be seen from the photos., the engine is of the single acting oscillating cylinder type, bore  $\frac{1}{2}$  inch, stroke  $\frac{1}{2}$  inch. The container, which is constructed of brass foil wrapped with thin piano wire, is 24 inches long and 3 inches in diameter. The propeller has a diameter of 16 inches, and is of the central type. The chassis is constructed of steel umbrella ribbing. The weight of the engine is 2.25 ozs., while the total weight of the model is 21 ozs.

"The overall length of the model is 3 ft., and the span is 5 ft."

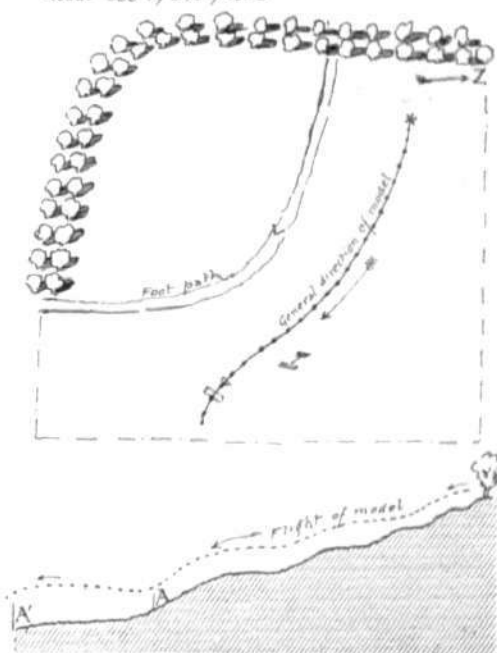
## Model Aeroplaning, with Observations on Weather Conditions.

By R. W. POTTS.

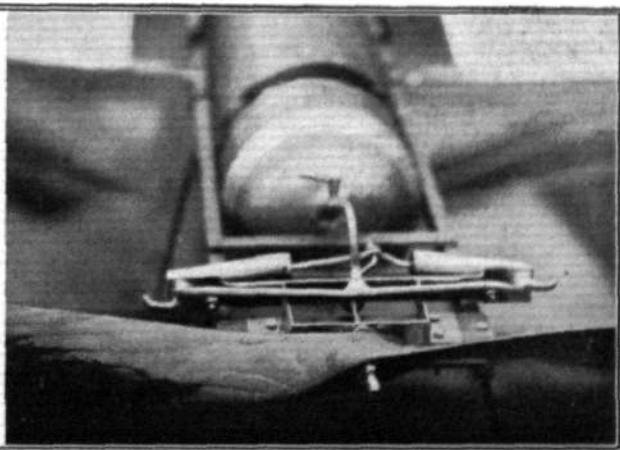
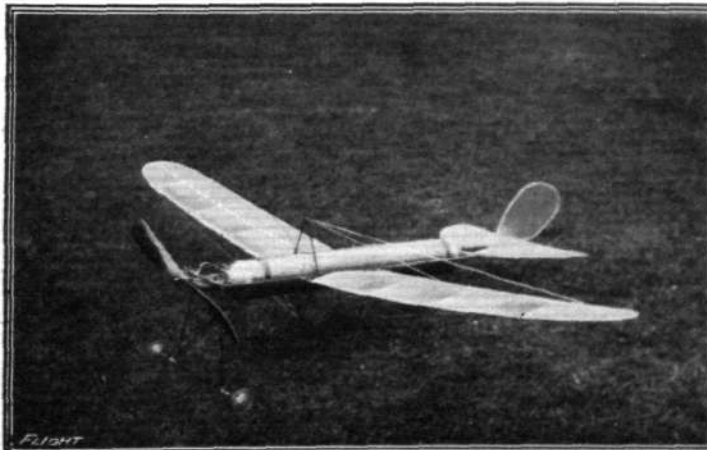
[The models used were Mann tractorplane and Clarke A3, A-frame type.]

1st. The wind during the day was blowing strong, and by 7 p.m. it had fallen to *nil*. The aeroplane was noticed to fly well, the motor

About 800 by 570 yards



Plan of field used as aerodrome, contour of field and path of Mr. Potts' model.



Mr. J. R. Barrett's neat compressed-air-driven monoplane model. On the right, enlarged view of engine and propellers.

[rubber] being unwound before reaching the earth. The air currents up to the elevation of about 30 ft. seemed to be still travelling, as if from the impetus gained during the heavy wind. By launching the model low down it followed the contour of the ground to the point marked A in sketch, when it rose and flew over the railings, the region marked AA' containing stationary air.

2nd. Snow on the ground, cold weather and wind nil. The atmosphere was found to be very heavy, the model flying steady, but appeared as though it was working hard to get through a solid. No air currents seemed to be in motion till very near the ground. Flights very short.

3rd. Rain and wind moderate. Model flew very fast, making long flights, but was always in danger of being driven to the ground.

4th. Hot, calm night. Air pockets make their presence known; model flew badly, stability and speed decreasing very much.

5th. Gusty wind and hot night. Model very seldom flew more than 100 yards, flights being very erratic and altogether unsuccessful.

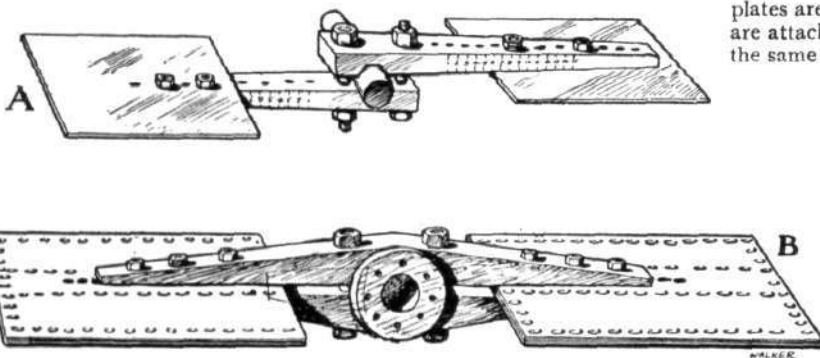
### Mr. G. H. Kilshaw's Latest Model.

Our illustration shows Mr. Kilshaw's latest development in model experimenting. As the illustration shows, the model is of the divided tail type. Mr. Kilshaw says that this model has given much better results than any of his previous machines. Our correspondent says that he is not particularly taken up with the appearance of the machine, and we must confess in this respect we cannot help agreeing with him.

But, after all, efficiency is the first consideration. The appearance of the model has not, it would appear, produced any more favourable impression on Mr. Kilshaw's club, since he says it is known amongst the members as the "angry" wasp.

### THE WALKER FAN BRAKE DYNAMOMETER.

ONE of the simplest forms of measuring the brake horse-power of an engine is by means of the absorption dynamometer or fan brake. This consists of a fan—mounted on the engine to be tested—the blades of which absorb a certain amount of power in being revolved through the air. The power thus expended is in proportion to the area and radial positions of the blades and the number of revolutions



"Flight" Copyright.

Fig. 1.—A. The standard Walker fan brake dynamometer. B. The special aviation model.

per minute, a blade or plate of a certain area and radial distance absorbing a certain h.p., which varies as the cube of the revolutions. It is on this principle that the fan brake invented by Mr. W. G. Walker, A.M.I.C.E., M.I.M.E., is based, and two of the specially calibrated sets of fans, together with h.p.-curves supplied by Messrs. W. G. Walker and Co., of Emery Hill, Westminster, London, S.W., are illustrated in the accompanying sketches. Fig. 1A shows the standard model as supplied to many leading engineering works, in addition to the Government, the London County Council, &c. They are supplied in five sizes, as follows:—6 h.p., 10 h.p., 30 h.p., 60 h.p. and 150 h.p. It will be seen that the blades or plates can be bolted on to the arms at various radii; different sizes of plates are also provided. The arms are so designed that they may be clamped on to various diameters of shaft in the manner shown.

The method of measuring the h.p. of an engine or motor is quite simple. A pair of plates suitable for the speed and power of the engine are adjusted on the arms which are clamped on the engine shaft. The engine is then run and the number of revolutions taken. On referring to the specially prepared chart (Fig. 2), the h.p. can be read from the curve corresponding to the particular radius used. For example, suppose  $8\frac{1}{2}$  by 17 plates at radius No. 7 are fitted, and the r.p.m. are 1,200, then the chart shows the h.p. to be 50. For

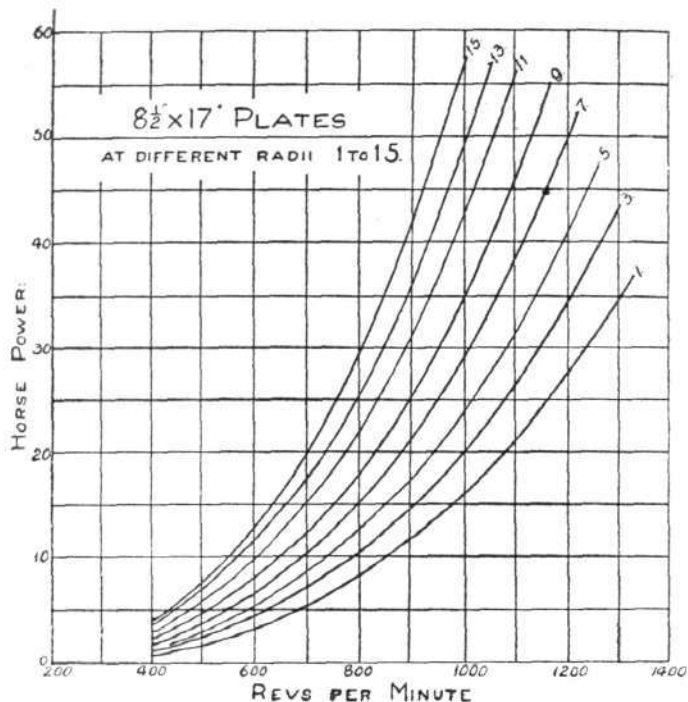


Fig. 2.—The chart, used in conjunction with the Walker fan brake, from which the horse-power is read.

greater accuracy a constant for each particular plate and radius is given, from which the h.p. can be calculated, viz.:  $\text{h.p.} = (\text{r.p.m.})^3 \times \text{Constant}$ .

Fig. 1B shows a model specially designed for use on aero engines. The method of its application is the same as in the case of the standard model, the only difference being in construction and the way it is attached to the motor. The arms are made of ash, and the plates are of six-ply birch backed with sheet aluminium. The arms are attached to a boss, which is made to fit on to the engine shaft in the same way that the propeller itself is.

### Aeronautical Patents Published.

Applied for in 1914.

Published June 17th, 1915.

- 9,816. G. R. LAWRENCE. Aeroplanes.
- 12,288. V. BALDO. Lever for automatic stability of aeroplanes.
- 19,516. S. E. SAUNDERS. Aircraft.
- 20,537. A., H. L., AND H. O. SHORT. Aeroplanes.
- 20,774. F. M. FREDERIKSEN. Self-stabilising aeroplane.

Applied for in 1915.

Published June 17th, 1915.

- 1,077. E. R. CALTHROP. Parachutes.
- 6,122. G. R. LAWRENCE. Aeroplanes.

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